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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|--------------------|
| 10/825,303 | 04/16/2004 | Yasushi Takai | 0171-1056P | 7758 |
| 2292 | 7590 | 03/24/2006 | EXAMINER | |
| BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747 | | | | MCNEIL, JENNIFER C |
| ART UNIT | | PAPER NUMBER | | |
| | | 1775 | | |

DATE MAILED: 03/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

CMA

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|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/825,303 | TAKAI ET AL. | |
| | Examiner | Art Unit | |
| | Jennifer C. McNeil | 1775 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 27 December 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-6 and 9-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,2, 3, 9-15 is/are rejected.
- 7) Claim(s)4-6 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-3 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/715,473. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of '473 encompass the limitations of the instant claims in that the rare-earth containing oxides are considered commensurate with lanthanoid oxides, and additionally, as the articles are made of substantially the same materials, one would fully expect the characteristics to also be commensurate.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Upon resolution of all other pending rejections, the double patenting rejection will be withdrawn if the other application noted above has not been allowed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 10, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Latta et al (US 4,526,629). Latta teaches an article comprising one or more monolayers of cerium oxide (oxidized cerium layer) over a niobium metal substrate. Latta teaches that the substrate may also comprise tantalum (col. 6, lines 5-10). Latta also teaches that the cerium oxide layer may also be terbium (col. 6, lines 3-5). While an intervening layer may be provided between the substrate and the rare earth layer, the claim language is open in which case additional structures may be present.

Claims 9, 10, 11, 12, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Subramanian (US 6,294,260). Subramanian teaches a barrier coating for turbine components. The barrier coating comprises an oxide with the base structure of $(A,B)_xO_y$. A and B may be selected from rare earth elements such as La, Dy, Ho, Er, Gd,

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Yb, Eu, and Sm. Subramanian teaches that the substrate may be a superalloy with a composition including Cr.Al.Co.Ta.Mo.W (col. 1, lines 31-35).

Regarding claim 11-13, as stated above, both A and B may be a rare earth, such as Yb.

Regarding claim 14, the thickness of the layer may be 0.0112-0.254 cm.

Claims 9-13 are rejected under 35 U.S.C. 102(a) as being anticipated by Maloney (US 6,177,200). Maloney teaches a ceramic material used as a thermal barrier on metal substrates. The ceramic material comprises the composition $A_2B_2O_7$, wherein A may be gadolinium, lanthanum, yttrium or mixtures thereof, and B may be zirconium, hafnium, titanium, and mixtures thereof. The substrate may be an iron, nickel, or cobalt based metal and containing chromium and aluminum and usually containing titanium and refractory metals. Other substrates that may be used include steels, and titanium alloys. Refractory metals are considered to include Mo, and Ta.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beele (US 6,387,526) in view of Strangman (US 5,514,482). Beele teaches a thermal barrier layer including a substrate of an iron, cobalt or nickel superalloy and a layer of an oxide having the structure $A_2B_2O_7$, wherein A may be samarium, gadolinium or europium. Therefore this layer is a rare-earth containing oxide. Beele does not specifically teach a nickel superalloy substrate alloys with one of the elements of the instant claims. Nickel, iron, and cobalt superalloys are well known in the art of turbine engines. Strangman teaches some common nickel-superalloys as shown in Table 1. At least one of the alloys includes Mo and/or Ta. It would have been obvious to one of ordinary skill in the art at the time of the invention to use one of the commonly known superalloys of Strangman as the superalloy substrate in Beele, as they are both used in turbine engine components for their high temperature durability.

Regarding claims 11 and 12, Beele teaches that ytterbium, samarium, or europium may be the rare-earth element.

Regarding claim 14, Beele does not teach a specific thickness of the thermal barrier coating, however, absent a showing of unexpected results, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a layer with sufficient thickness to provide the desired thermal barrier properties to the underlying substrate.

Regarding claim 15, an additional layer may be formed over the thermal barrier coating. The additional layer may comprise the same composition of the thermal barrier layer, wherein B is Hf or Zr, and A may be lanthanum (col. 6, lines 33-40).

Regarding the phrase "thermal spraying operation", the process by which the product is made has not been shown to structurally define over the prior art.

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heimberg et al (US 6,440,575) in view of Strangman (US 5,514,482). Heimberg teaches a ceramic thermal layer for turbine engine components. The substrate is a nickel, cobalt, or chromium based superalloy. The substrate is coated with a bonding layer which when the underlying layer contains lanthanum, leads to the formation of lanthanum oxide in the bonding layer. Heimberg does not specifically teach a nickel superalloy substrate alloyed with one of the elements in the instant claims. Nickel, iron, and cobalt superalloys are well known in the art of turbine engines. Strangman teaches some common nickel superalloys shown in Table 1. At least one of the alloys includes Mo and/or Ta. It would have been obvious to one of ordinary skill in the art at the time of the invention to use one of the commonly known superalloys of Strangman as the superalloy substrate in Heimberg, as they are both used in turbine engine components for their high temperature durability.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maloney (US 6,177,200). Maloney teaches a ceramic coating on a metal substrate as discussed above, but does not specify the thickness of the ceramic coating. Absent a showing of unexpected results, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a layer with sufficient thickness to provide the desired thermal barrier properties to the underlying substrate.

Claims 4-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed December 27, 2005 have been fully considered.

Applicant added new claims 9-15 which have been rejected above. Regarding these claims, while claim 9 states, "coated member comprising a substrate of molybdenum", this is interpreted as a substrate comprising molybdenum. The claim language is not considered to reflect a substrate "consisting of" molybdenum, or in the case of claim 10, "consisting of" tantalum. For this reason, the rejections are made above.

Regarding Latta, applicant argues that the reference fails to disclose a substrate directly coated by thermal spraying with the layer. Latta specifically teaches that the substrate is covered with an oxide of Ce, Pr, or Tb, which acts as a catalyst to oxidation of the underlying substrate and results in a thin insulating layer. However, the intermediate product has a cerium oxide layer applied directly to the underlying substrate and meets the limitations of the claims (*In re Mullin, Wetherby, and Chevalier*, 179 USPQ 97; *Ex parte Brinton* 82 USPQ 112).

Conclusion

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THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer C. McNeil whose telephone number is 571-272-1540. The examiner can normally be reached on 9AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer C McNeil
Primary Examiner
Art Unit 1775



JCM